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is cream colored; *B. tinctoria* is yellow and *B. australis* is blue. It is true that in this case the color does not *alone* form a distinguishing feature, because the species differ in other respects. It is an instance in which both the xanthic and the cyanic series of colors are represented in the same genus.

Other examples of color distinguishing species of plants could doubtless be given. If we turn from flowers to fruits a few instances may be cited. In *Sambucus Canadensis* the fruit is a deep black. In *S. pubens* it is red. In other respects these plants are similar. In *Morus rubra* the fruit is red; in *M. alba* it is white. In *Actæa alba* the fruit is white and *A. spicata*, var *rubra*, differs mainly from it in the different color of its fruit.

Even upon so inconstant and evanescent a character as *odor*, we find species occasionally separated, as is the case for example with *Philadelphus coronarius*, which is odorous, and *P. inodorus*, the name of which tells its character.

It is thus seen that even in so uncertain and generally so inconstant a character as color, we have sometimes a distinguishing feature. It is true that it is seldom the *sole* character, but certainly in the cases mentioned above it is the main one.

The Classification of Slight Varieties.

The other day I found near West Cliff in a damp meadow, some specimens of a form of *Sisyrinchium anceps*, differing in no respect from the type, except that the flowers are very pale bluish—so pale as to be almost white. Now this is rather interesting to me, more especially as of late I have been inquiring somewhat into the reasons of color mutations in flowers, and I should like to include it in my catalogue of Wet Mountain Valley plants, now preparing. How am I to enter it? Shall I say “a pale flowered variety?”—if I do, nobody will pay the least attention to it—or shall I call it “var. *pallidiflorum*” and bring upon me a cry of “name such a thing, just a color variety?!” Not that it particularly matters what I do, as the interest at present taken in “slight” varieties is itself slight enough, but suppose (as indeed I do suppose) that after all these slight mutations are quite important, and altogether worthy of study—being the fresh imprint of nature’s hand on plastic forms and parts, too fresh and

too slight to be permanent, precious to us for their very evanescence, for thereby we know they are the direct result of what to us must be first causes, if the term "first cause," is anywhere admissible. Look at it in this light and it becomes evident that we must no longer omit them from our lists, and that above all things it behooves us to take note of them, and of the circumstances under which they grew, for so shall we learn the beginnings of varieties and of species themselves. So we come back to the original question, how are they to be recorded? Now as to naming—are they to be named? Well, we cannot at all avoid some semblance of a name, if we only speak of "white varieties," and so forth. But science is international, and we have no business to be using English names, and it is exact, or should be, so "white varieties" evidently will not do, as we know that as a matter of fact this term will be applied quite loosely—as it is so often in the case of birds, where an "albino" is often recorded, which we afterward discover to have been a pallid or white-spotted form.

The names, then, must be like other scientific names, international and representing properly defined objects. So much for their general character, but do they follow the rules adopted for specific and other names? For instance, if I find a white-flowered *Campanula*, may I dedicate it to Jones, and call it *Jonesii*? This would hardly do, for the name does not in any way indicate the nature of the form, and nobody wants to associate it with the name of Jones for all time (myself and Jones excepted!) Again, what are these varieties to be called—are they "varieties" in point of fact? We cannot place them on the same footing as geographical races, and well established though not specific forms, and yet it has generally been the rule to rank all forms that were less defined than species under the common term "variety." Rather, these changeable varieties are to be called technically "forms"—a term which, if generally accepted, will likely swallow a good many of the so-called "varieties" of our text-books and periodicals. Therefore, perhaps we may go by two rules:

- (1). Classify all plants as species, subspecies, varieties or forms, according to the permanency of their characters.
- (2). In naming forms use only names which indicate the na-

ture of the peculiarity, these names to otherwise follow the rules for the names of species.

Further, it would be extremely good if those botanists who are interested would discuss the matter of names, and agree upon a code name to be adopted in every case of certain common varieties—for instance, “*albiflorus*” for a pure white mutation of the flower, in which case the name would be intelligible without the necessity of quoting the author’s name.

This admitted, my *Sisyrinchium anceps* becomes f. *pallidiflorum*, since it is clearly a “form” in the technical sense. At the same time, there is room for much difference of opinion as to what is a “form,” and it may often take patient observation and experiment to determine the rank of a plant. Mr. C. R. Orcutt tells us, in the last number of his paper, how a yellow-flowered *Mimulus cardinalis* narrowly escaped ranking as a new species, while now it has no name at all, though as a “form” it fully deserves one, and a very interesting form it is, when we remember that throughout organic nature, whether plants, birds, moths or mollusks, red has always a tendency to revert to yellow. What, again, of the *Ranunculus aquatilis* group, with its hosts of so-called species, which Hiern says are formed by the flow of water and like obvious conditions, and comes with mathematics to prove it, while those systematists who listen to him turn away from these plants in scorn, “not even *good* varieties,” to them quite abominable because we can know something of their nature?

T. D. A. COCKERELL.

West Cliff, Colorado, July 17, 1889.

Remarks on the Preceding Paper.

The questions which Mr. Cockerell has so forcibly discussed have appealed to all systematists and have yet never been satisfactorily solved. Incidentally, I have given them considerable thought and had gone so far as to introduce the term “forma” into my catalogue of the Plants of New Jersey, now in press, in very much the manner suggested by him, restricting its use, however, not necessarily to variations with but a slight degree of permanency, but to such as we may, perhaps, term physiological rather than structural. Variations in color are one set of these